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Book Reviews

Geriatrics Education

In Residency Programs

In Nursing Homes and CCRCs

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Geriatrics in Residency Programs

DAVID B. REUBEN, M.D., ARLENE FINK, Ph.D., SUSAN VIVELL, Ph.D., SUSAN H. HIRSCH, M.P.H., and JOHN C. BECK, M.D.

Abstract—To determine how well geriatrics has been integrated into residency training, the authors surveyed a random 33% sample of all the 378 family practice ($n = 126$) and 420 internal medicine ($n = 140$) training programs in the United States in 1988. All the programs responded. On average, the internal medicine programs had more geriatrics faculty than did the family practice faculty, but these numbers were insufficient to meet current or future needs. Fewer than half of the residencies had geriatrics inpatient or ambulatory-care evaluation units, geriatrics consult services, geropsychiatry wards, or geriatrics clinics available as training sites. In contrast, nursing homes were available for 93% of the family practice programs and 58% of the internal medicine programs. A total of 80% of the family practice programs but only 36% of the internal medicine programs had geriatrics curricula in place. The authors conclude that integration of geriatrics content into residency training is far from universal, largely because of a shortage of faculty and clinical training sites. *Acad. Med.* 65(1990):382–387.

Increased life expectancy and decreased birth rates have led to dramatic absolute and relative increases in the numbers of persons who are 65 years of age and older. In 1988, 12% of the population (30.4 million) were 65 or older; by 2030, the percentage will increase to nearly 20% (65.6 million).[1] This growth has important implications for the health care system because older Americans consume health care resources in excess of their representation in the population. Currently, the 12% of persons over 65 account for 20% of physicians' office visits, 25% of medications, and 40% of acute hospital admissions.[2]

Medical educators have responded to the aging of the American population by developing specific programs to teach physicians to care for the elderly. In the eight-year period from 1976 to 1984, the number of U.S. medical schools providing undergraduate clinical training rose from 15 to 88.[3,4] The number of geriatric medicine fellowship programs almost tripled, from 36 to 1980 to 103 in 1987.[5] Geriatrics-related continuing medical education programs have increased from an average of 14 per year in the mid-1970s to 43 per year in the mid-1980s.[5]

Of all the stages of medical education, residency training is perhaps most pivotal in preparing physicians to practice medicine. It is a time of intense clinical experience and, for many, the last formal training before practice. For others, it is the last general training they will receive before concentrating on subspecialty medicine.

Training in geriatric medicine during residency emerges as a particularly important issue because the majority of clinical care has been and will continue to be delivered by physicians without specific training in geriatrics. In 1985, over half of all ambulatory care of persons 75 years of age and older was provided by general or family practitioners and internists.[2] An analysis of 1986 Medicare data reveals that physicians in these two specialties provide almost two-thirds of hospital care and over 95% of nursing home care of elderly persons.[6]

In response to the changing demographic profile and the role of primary care physicians in providing clinical care to elderly persons, special requirements have been issued in both internal medicine and family practice to increase residency training in geriatric medicine.[7–9] The resulting growth of specific geriatrics training in internal medicine (IM) and family practice (FP) residency programs has been reported in several studies. In 1979, Robbins and colleagues[10] reported that 21% of the 28 academic geriatrics units, nationwide, offered mandatory housestaff rotations. By 1984, Calkins[11] noted that 43% of 30 academic units provided mandatory housestaff rotations for most of the residents in internal medicine and/or family practice, almost a doubling of residency training opportunities in geriatrics. A 1980 survey[12] of family medicine residency programs reported that less than one-

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Other articles about geriatrics training appear on pages 412, 414, and 417.

fourth had a geriatrics teaching program in place and only 29% had plans for developing such a rotation. By 1985, 76% of family practice residency programs offered specific training in geriatrics, and in 81% of these, the training was mandatory.[13] An unpublished 1985 survey[14] by the Association of Program Directors in Internal Medicine found that 60% of programs in internal medicine offered formal teaching in geriatrics, though this teaching may have amounted to only an occasional lecture. According to that survey, internal medicine residents were nine times more likely to take an elective rotation in cardiology than in geriatrics. Still lacking, however, is a comprehensive overview of geriatric medicine training during internal medicine and family practice residencies that evaluates and compares the two specialties that provide the majority of care to older persons.

To determine how well geriatrics has been integrated into residency training, we conducted a national survey of residency training programs in internal medicine and family practice.

Method

The survey was designed to gain a national perspective on current and planned educational activities in geriatrics at the residency training level.

Sampling

Using the 1988–1989 *Directory of Graduate Medical Education Programs*,[8] we randomly chose for the survey a 33% sample of all the 420 IM and 378 FP programs (excluding military programs) in the United States. Because of wide variation in the structures of FP programs, before we made our random choices of programs, we stratified the programs on the basis of type of program (medical school-based; community-based, medical school-administered; community-based; medical school-affiliated, community-based). The survey sample consisted of 126 FP programs and 140 IM programs. Of the IM programs, 29 (21%) had primary care tracks.

Survey Description

We developed a survey instrument (available on request from the authors) that asked about program characteristics; need and supply of geriatrics faculty (defined as faculty with expertise or training in geriatric medicine); training sites; the value of specific training in geriatric medicine; obstacles to the development of geriatrics curricula; and characteristics of the specific geriatrics curriculum, if present or planned. We defined "current and planned geriatrics curriculum" broadly to include clinical and didactic teaching; a subsequent question asked what percentage of the curriculum was clinical. We also asked whether the institution had specific programs for faculty development in geriatrics.

The survey questionnaire was structured to distinguish three levels of program development: geriatrics curriculum already in place, geriatrics curriculum planned within five years, and geriatrics curriculum not in place nor planned within five years. All who responded completed a common part of the survey and then, depending on the state of development of their programs, they were directed to complete appropriate remaining parts of it. Opinion questions used a three-point Likert scale (very important, important, not important) to rate the importance of specific elements of geriatrics training. The survey was tested by faculty members of the UCLA Multicampus Division of Geriatric Medicine and revised before being administered nationally.

Survey Administration

Prior to the administration of the survey, the project was given the support of the Association of Program Directors in Internal Medicine (APDIM) and the Association of Departments of Family Medicine (ADFM). This support was conveyed in a cover letter mailed with the survey to the program directors in March 1988. The survey was completed by the program directors or forwarded to an appropriate faculty member, often a geriatrician. Although confidentiality was assured, the name and title of the person completing the questionnaire were recorded to allow comparisons between geriatricians (defined by a title that indicated an administrative role in the geriatrics curriculum or a name known by the investigators to be that of someone who had completed a geriatrics fellowship or its equivalent) and non-geriatricians.

We gave the physicians one month to return the completed survey by mail and then called those who had not responded and completed their surveys by telephone. The telephone interviewers were trained by the research team and monitored closely to insure that the information collected by telephone was comparable to that collected by the mailed-in surveys. In addition, the responses to key questions were compared on the basis of whether the survey had been received by mail or completed over the telephone.[15] In general, there were no significant differences between the responses received by mail and those taken over the telephone.

Statistical analysis included descriptive statistics, chi-square, analysis of variance (ANOVA), and *t*-tests using the Bonferroni modification to adjust for multiple testing.

Results

All the 266 sampled programs responded. One hundred and seventy-one (66%) of the responses were received by mail and the remainder were taken by telephone. Over half (53%) of the respondents were departmental chairs or program directors, while 47 (18%) were geriatrician faculty members; nine (3%) were curriculum directors for residency program; 41 (19%) were other staff members (for example, administrative coordinators) and 16 (6%) were unidentified.

The vast majority of programs (87% in internal medicine and 90% in family practice) were affiliated with medical schools. The family practice programs were smaller (on average, 19 total residents) than were the categorical IM programs (on average, 41 total residents) and were approximately the same size as the primary

Table 1

Average Numbers of Geriatrics Faculty Available and Needed in 126 Family Practice Programs and 140 Internal Medicine Programs, 1988*

Type of Faculty	Average Number of Faculty	
	Internal Medicine	Family Practice
Available		
Full-time geriatrics faculty	2.8	2.3
Full-time geriatrics faculty with formal training in geriatrics	0.6	0.4
Part-time or voluntary geriatrics faculty	4.4	2.8
Needed		
Full-time geriatrics faculty currently needed	4.0	2.2†
Full-time geriatrics faculty needed in five years	5.2	2.9†

*To determine how well geriatrics has been integrated into residency training, the authors surveyed and obtained responses from 33% of all 378 family practice programs and all 420 internal medicine programs in the United States.

†$p < .05$ between specialties.

care IM programs (on average, 18 total residents).

Geriatrics faculty resources are presented in Table 1. Although the IM programs had more geriatrics faculty, the ratio of residents per full-time geriatrics faculty was higher in internal medicine (13.2:1) compared with family practice (7.4:1). Furthermore, 33% of the IM programs and 13% of the FP programs had no full-time faculty with expertise or training in geriatrics ($p < .001$). A minority of the programs in both disciplines had formally trained geriatricians as full-time faculty members; 65% of the IM programs and 71% of the FP programs had no formally trained full-time faculty member in geriatrics (not significant). Fewer than one-third of the programs in either specialty offered specific programs in geriatrics faculty development.

Existing and projected clinical sites for teaching geriatrics are presented in Table 2. Fewer than half of the IM and FP residencies had inpatient or ambulatory geriatrics evaluation units (GEUs), inpatient geriatrics consult services, geropsychiatry wards, or geriatrics clinics currently available as training sites. Even if all anticipated development of training sites is achieved, the majority of programs in both specialties will not have geropsychiatry wards available within the next five years. Significant differences between specialties were evident in current availability of inpatient GEUs (more common in the IM programs) and nursing homes (more common in the FP programs).

Fifty-one (36%) of the IM programs and 101 (80%) of the FP programs had geriatrics curricula in place at the residency training level ($p < .001$). In internal medicine 61% of curricula were required and in family practice 92% were required. Current curricula in both specialties were, on average, approximately five weeks long, and about three-fourths of the time was spent in clinical experiences. An additional 42% of the IM programs and 15% of the FP programs planned to implement geriatrics curricula within five years (difference not significant). Almost all those who responded envisioned the scopes of their programs in geriatrics to be greater in the next five years.

We compared the programs that had geriatrics curricula in place with those that did not with respect to faculty resources and training sites (Tables 3 and 4). Faculty resources and needs were similar within disciplines, except that the IM programs with geriatrics curricula had more formally trained geriatricians. Marked differences between the IM and FP programs with geriatrics curricula were apparent, however. Of note, 42% of the IM programs and 68% of the FP programs with curric-

Table 2

Numbers and Percentages of 126 Family Medicine Programs and 140 Internal Medicine Programs with Clinical Sites for Teaching Geriatrics and with Plans for Such Sites, 1988*

Type of Clinical Site	Programs with Site				Programs Planning to Have Site within Five Years			
	Internal Medicine		Family Practice		Internal Medicine		Family Practice	
	No.	%	No.	%	No.	%	No.	%
Inpatient geriatrics evaluation unit†	49	35	21	17	42	30	49	39
Inpatient geriatrics consult service	59	42	43	34	56	40	44	35
Geropsychiatry ward	38	27	23	18	24	17	26	21
Ambulatory geriatrics evaluation unit	48	34	51	40	40	29	41	33
Geriatrics clinic	55	39	41	33	37	26	39	31
Nursing home†	81	58	117	93	27	19	8	6

*To determine how well geriatrics has been integrated into residency training, the authors surveyed and obtained responses from 33% of all 378 family practice programs and all 420 internal medicine programs in the United States.

†Between specialties, $p < .01$.

Table 3

Average Numbers of Geriatrics Faculty Available and Needed in 140 Internal Medicine Programs and 126 Family Practice Programs That Either Had or Did Not Have a Geriatrics Curriculum, 1988*

Type of Faculty	Average Number of Faculty			
	Internal Medicine Programs		Family Practice Programs	
	With Curriculum ($n = 51$)	Without Curriculum ($n = 89$)	With Curriculum ($n = 101$)	Without Curriculum ($n = 25$)
Available				
Full-time geriatrics faculty‡	3.4	2.4	2.3	2.4
Full-time geriatrics faculty with formal training in geriatrics‡	1.1	0.3†	0.4	0.3
Part-time or voluntary geriatrics faculty	2.6	5.2	2.7	3.2
Needed				
Full-time geriatrics faculty currently needed‡	4.3	3.9	2.2	2.2
Full-time geriatrics faculty needed in five years‡	6.2	4.6	2.8	3.0

*To determine how well geriatrics has been integrated into residency training, the authors surveyed and obtained responses from 33% of all 378 family practice programs and all 420 internal medicine programs in the United States.

†$p < .01$ between the programs with curricula and those without curricula, within each specialty.

‡$p < .05$ between the internal medicine programs with curricula and the family practice programs with curricula.

ula in place had no formally trained faculty in geriatrics ($p < .01$) (not displayed in table). Programs with and without geriatrics curricula also differed with respect to available training sites. Inpatient GEUs and geriatrics consult services and ambulatory geriatrics clinics were common only in the IM programs that had geriatrics curricula (Table 4). In contrast, nursing homes were nearly universal in the FP programs that had geriatrics curricula.

More than 85% of geriatrics curricula in both specialties used an interdisciplinary approach (a team of physician and nonphysician health care providers with diverse areas of expertise), but internal medicine offered a greater number of interdisciplinary conferences per month (3.4 versus 2.1, $p < .001$). Nevertheless, residents in the two disciplines attended almost the same number of conferences during their residencies (averages 14.9 and 14.3, internal medicine and family practice, respectively). Research

Table 4

Percentages of 140 Internal Medicine Programs and 126 Family Practice Programs with Clinical Sites for Teaching Geriatrics and with Plans for Such Sites; Programs Categorized as Those with and Those without a Geriatrics Curriculum, 1988*

Type of Clinical Site	Percentage of Programs with Site				Percentage of Programs Planning to Have Site within Five Years			
	Internal Medicine Programs		Family Practice Programs		Internal Medicine Programs		Family Practice Programs	
	With Curriculum	Without Curriculum	With Curriculum	Without Curriculum	With Curriculum†	Without Curriculum†	With Curriculum†	Without Curriculum†
Inpatient geriatrics evaluation unit	63	22	21	9	22	37	21	9
Inpatient geriatrics consult service	73	25	39	22	22	51	37	35
Geropsychiatry ward	35	18	24	5	28	21	23	19
Ambulatory care geriatrics evaluation unit	64	21	47	22	23	35	33	36
Geriatrics clinic	81	19	40	17	17	35	33	36
Nursing home	80	49	96	78	12	24	3	22

*To determine how well geriatrics has been integrated into residency training, the authors surveyed and obtained responses from 33% of all 378 family practice programs and all 420 internal medicine programs in the United States.

†Curriculum status at the time of this study.

opportunities in geriatrics were available in approximately two-thirds of the programs that had geriatrics curricula in both specialties, but in the preceding two years few residents had participated in geriatrics research (average 1.1 in internal medicine and 0.45 in family practice, $p < .05$).

In response to our attitude questions, the FP respondents rated the importance of specific training in geriatric medicine higher than did the IM respondents ($p < .001$). Among the IM group, the geriatricians rated the importance of specific geriatrics training higher than did the department chairs and/or program directors ($p < .001$).

Overall, the most frequently cited major obstacle to implementing geriatrics curricula was the lack of faculty. This observation held true in every subgroup (curriculum in place, planned, and not planned) and in both specialties. The only exception was the FP programs that had a curriculum in place. The major obstacle for this subgroup was that the FP curriculum was "too full." Overall, a full curriculum was the second most frequently cited major obstacle. Resistance by residents and faculty, lack of training sites, and inadequate patient census were mentioned less frequently as major obstacles.

Discussion

How well integrated into residency training is geriatrics? Our results indicated that 80% of our sample of the U.S. family practice programs, but only 36% of our sample of the internal medicine programs had geriatrics curricula in place. If all the programs that were planning to institute geriatrics curricula within five years are able to achieve their goals, these figures will rise to 95% for family practice and 78% for internal medicine. Although this increase in geriatrics curricula from 21% in 1979[10] to our combined rate of 57% is laudable, the rate of growth at this level of training is less than that at other levels of medical education.[5] Furthermore, the discrepancy between family practice and internal medicine is of concern. In addition to having fewer geriatrics curricula in place, only 61% of the internal medicine curricula were required, compared with 92% of those in family practice.

Although more residency programs have instituted geriatrics curricula, these programs can be effective only if they have adequate faculty and training sites. Our data suggest that, in general, current and future faculty resources are inadequate to meet the needs of teaching geriatrics in residency training. Our respondents indicated that there is currently an average mismatch between existing and needed full-time-equivalent geriatrics faculty of 1.2 positions per program in internal medicine residency programs. If we extrapolate our findings, we calculate that in order to correct this degree of mismatch for all the 420 U.S. internal medicine programs, an additional 500 full-time-equivalent geriatrics faculty are needed. Using similar calculations for all U.S. programs based on the perceptions of needs in five years reported in the responses to our survey, another 500 full-time faculty will be needed in internal medicine and 225 will be needed in family medicine. This need for an additional 1,225 geriatrics faculty specifically for residency education and training in the next five years far exceeds the potential to train geriatrics faculty even if the Institute of Medicine is report's recommendation to double fellowship training capacity in geriatrics were adopted.[16] Moreover, even if training opportunities were available, the discipline is plagued by a dearth of qualified physician applicants for geriatrics fellowship training. Consistent with these findings, the major obstacle in implementing geriatrics curricula has been the lack of faculty. In spite of this lack of faculty, fewer than one-third of the institutions responding reported having specific programs in geriatrics faculty development. Clearly, the training of faculty in geriatric medicine is emerging as an important medical education and health policy priority.

Clinical training sites also appear to be insufficient and inadequate at present. The majority of the residency programs in both specialties had neither inpatient nor ambulatory geriatrics evaluation units available for training. These units have become the cornerstone for patient care and for educational efforts in geriatrics,[17] and they provide natural settings for teaching geriatrics using an interdisciplinary approach.[18] Similarly, the number of geropsychiatry units is insufficient. In contrast, nursing homes have rapidly been accepted as training sites. Although the use of institutional long-term care settings as teaching sites is to be commended, we are concerned that some programs may be regarding a nursing home clinical experience as sufficient exposure to geriatric medicine. In fact, institutional long-term care is only a small component of clinical geriatrics. The relative paucity of other available clinical sites, even among programs that currently have geriatrics curricula, supports this concern.

The second major obstacle identified in our study was the perception that the residency curriculum was too full to adequately develop a geriatrics curriculum. We believe that this obstacle can best be overcome by a reevaluation of the educational priorities of residency training. Given the current and projected proportions of patient care that family practitioners and internists devote to the primary care of older persons, can mandatory intensive care and emergency room rotations be justified at the expense of geriatrics rotations? Perhaps increased training in geriatrics can be coupled with other changes in the structure of residency training. For example, the Accreditation Council for Graduate Medical Education mandates that at least 25% of time be spent in ambulatory training in internal medicine programs[9] may be addressed by development rotations or longitudinal experiences in ambulatory geriatrics evaluation units.

The implementation of structural changes in residency programs to increase geriatrics content will require attitude changes, particularly in internal medicine. In general, internal

medicine faculty completing our survey ranked the importance of geriatrics training lower than did the family practitioners. Furthermore, within internal medicine, program directors and/or departmental chairs ranked the importance of geriatrics lower than did geriatricians. Efforts to increase geriatrics training in residency programs will undoubtably require the support of program directors, departmental chairs, and deans. We also believe that the residency review committee requirement of a formal geriatrics curriculum for family practice[8] has greatly accelerated the incorporation and acceptance of geriatrics as an integral part of residency training in that specialty. Similar support from the Accreditation Council for Graduate Medical Education[9] will probably promote the universal development of geriatrics curricula in internal medicine residency programs.

In interpreting our results, the potential biases of survey research must be noted. To reduce selection bias, we randomly selected a large, stratified, national sample. Another potential major problem, responder bias, was eliminated by obtaining a 100% response rate.

What future research is necessary, given the results of this study? The next step in assessing geriatrics teaching in residency training will be to define curricular content and assess how well programs are meeting their specific training goals. The effects of these curricula on improving attitudes, clinical skills, and knowledge in caring for the elderly population also need to be more stringently examined. Finally, the effect of improved training in geriatrics on quality of care provided to elderly persons must be evaluated.

In summary, some progress has been made towards including geriatrics content in residency training. Nevertheless, curriculum implementation in geriatrics is still far from universal. Moreover, serious obstacles may limit the expansion of geriatrics training in residency. The most important of these appear to be a shortage of faculty, a lack of adequate training sites, and possibly a lack of support from department chairs and program directors. Until these obstacles are overcome, the ability of residency programs to provide satisfactory training for internists and family practitioners in the care of elderly persons remains in doubt.

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Faculty Development and Organizational Systems Behavior

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Abstract—Faculty development is that process that fosters improvement in faculty members' skills in teaching and research and promotes their career advancement. This study investigated the association between organizational behavior in military medical centers and the faculty development of its medical corps officers assigned to teaching positions. Such organizational behaviors as defining tasks clearly and resolving conflicts satisfactorily correlated well with the faculty members' overall satisfaction and other parameters of good faculty development. The results suggest that a strong relationship exists between the organizational behavior of an institution and the sense of identity, productivity, and continued career growth of its individual faculty members. *Acad. Med.* 65(1990):406–409.

This study examines the relationship between faculty and the organizational systems within which these faculty teach and work. Although the data were collected within the structure of the military medical center system, the authors maintain that the concepts can be generalized and applied to faculty development and organizational systems in other settings. Indeed, the pressures and requirements of faculty in terms of patient care, teaching, publishing, peer review, board certification, and other activities are essentially the same whether one is at a military medical center or at a comparable civilian university hospital. The same could be said for the essentials of the corresponding bureaucracies, in that the organizational behaviors of our teaching institutions determine the effectiveness and career satisfaction of their faculties and therefore the career development of the individual faculty member.

The military medical system in which this study was done is currently the largest single health care provider in the United States. At just one of its moderate-sized teaching centers, for example, there are over 100,000 outpatient visits each month. The challenge for military medicine is to procure and maintain a highly trained and skilled cadre of physician manpower to care for the ever-expanding pool of eligible patients. Since World War II, the backbone of this effort has been the military's postgraduate training programs, primarily situated in its modern centers and in selected community hospitals that have evolved as teaching centers.

Since the maintenance of these physician training programs is vital to the integrity and continuity of a modern medical corps, the military has assumed the responsibility of securing and developing the necessary faculty to staff each of these teaching programs. The challenge of faculty development requires that the careers of these faculty be thoughtfully developed to insure that the individuals remain productive and enthusiastic in their teaching disciplines and that the high quality of the training programs be maintained. In this regard, the institution's organizational behavior has a direct and significant impact on the ability to retain good faculty.

In attempting to investigate the organizational behavioral elements that have an impact on faculty development, the authors have used the military training programs as a microcosm within which the broader arena of academic medicine can be viewed. The combined faculty of the major teaching medical centers within the military were surveyed for this study. Within these institutions, key organizational elements were identified and studied as to their influences on faculty career development. Productive and nonproductive organizational behaviors were analyzed with successful faculty development as the measured outcome.

One of the critical questions in starting a study of this magnitude is first to clearly conceptualize what is meant by "faculty" and what is meant by "faculty development."

Historically, the teaching of most professional and academic subjects has been left to experts, who are usually quite knowledgeable in their fields, but often have no formal training as educators. The modern concept of faculty implies some skill beyond patient care that enables a person to transfer knowledge to a learner. This process has usually relied heavily on inspiration, hard work, and enthusiasm, but in the climate of academic medicine today, such skills as research methodology, program development and evaluation, and management skills, as well as knowledge of a variety of teaching methods, are complementary to the career of an academic physician.[1,2]

Faculty development, then, is that process that fosters improvement in faculty members' teaching and research skills and promotes their career advancement; a faculty development program should encompass all activities that assist faculty in these ways. Jason and Westberg[3] recommend a six-step strategy in creating a faculty development program:

1. Determine the expectations, needs, and goals of teachers.

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The opinions and assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the U.S. Army or the Department of Defense.

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2. Share goals, expectations and convictions. Provide a forum for communication.

3. Jointly formulate goals in cooperation with participating faculty.

4. Jointly decide on strategies for meeting these goals. This might involve planning workshops, retreats, presentations, or demonstrations, or experimenting with theoretical models of instructional methodology.

5. Jointly decide on strategies for evaluating the teachers' progress. This often is the step that can potentially produce the greatest rewards or, conversely, the greatest disappointments in a program.

6. Implement the program. A program needs to have clear, realistic, obtainable goals.

The systematic adherence to these six steps can provide a framework from which to develop a faculty development program within an organization or evaluate an existing program. Using this strategy as a model, an analysis of the organizational system's influence upon the effectiveness of a faculty development program can be made.

Method

For the present study, the previously stated concepts of faculty development were objectified into the dimensions of personal esteem, professional career growth, intrinsic motivation, identity with task performance, group identity, realization of personal objectives, career satisfaction, and productivity. These eight variables of faculty development were compared with elements constituting organizational behavior, which were extracted from the literature[4,5] and consisted of systems structure, group norms, resource allocations, statement of mission, task definition and objectives, reward system, power and authority, information processing, group performance, and intragroup conflicts.

These dimensions of organizational behavior and faculty development were then codified into survey questions and formatted with a five-point Likert-type scale of strongly disagree, disagree, no opinion, agree, and strongly agree. There were 32 questions for both the faculty development and the organizational behavior dimensions, with between three and five questions describing each. There were also demographic questions dealing with the institution, department assignment, formal rank (for economic and tenure data), career longevity, and professional responsibility, for a total of 77 questions. The questionnaire as well as the key for which questions collate with each of the dimensions is available upon request.

In June 1988, questionnaires were distributed to 13 military medical teaching hospitals.* An estimated 2,331 teaching faculty were identified and surveyed at these institutions.

*Army = Walter Reed Amy Medical Center, Washington, D.C.; William Beaumont Army Medical Center, El Paso, Texas; Brooke Army Medical Center, San Antonio, Texas; Letterman Army Medical Center, San Francisco, California; Fitzsimmons Army Medical Center, Denver, Colorado; Tripler Army Medical Center, Honolulu, Hawaii; Madigan Army Medical Center, Tacoma, Washington; and Dwight David Eisenhower Army Medical Center, Augusta, Georgia. Navy = Bethesda Naval Hospital, Bethesda, Maryland; Portsmouth Naval Hospital, Portsmouth, Virginia; Oakland Naval Hospital, Oakland, California; and Balboa Naval Hospital, San Diego, California. Air Force = Keesler AFB Regional Medical Center, Biloxi, Mississippi.

Results

A total of 1,097 surveys were returned by the given completion deadline. Two of the three Air Force hospitals surveyed initially declined, but subsequently conceded to participate at a later date after receiving approval from higher authority, although not in time for completion of this study. This accounted a rather low return rate from the Air Force. The overall return rate from all faculty was 47%.

Demographic Data

Approximately 98% of the faculty who responded had completed residency training, with 71% having done postgraduate work in a military program and the rest in a civilian institution.

Only 9% of the responding faculty stated that their hospitals or departments had existing faculty development programs, while 91% stated negatively or were not sure.

Of the 1,097 physicians completing the questionnaire survey, 99 were women and 998 were men.

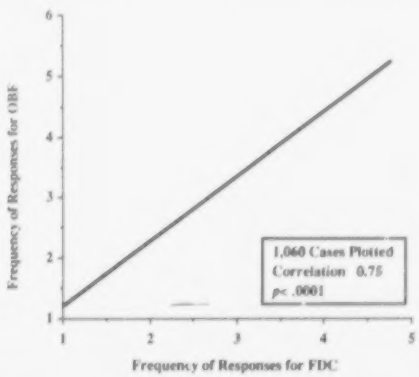

Figure 1. **Graphic representation of regression data (Pearson's *r*) taken from a scatter plot of the frequency of mean Likert scale responses for the Organizational Behavior Factor (OBF) compared with the frequency of the mean responses for the Faculty Development Coefficient (FDC). The strong linear relationship of the data reflects the correlation between the values for the OBF and the corresponding values for the FDC for the military teaching hospitals studied. As the favorable institutional behaviors such as clear goals and performance objectives, or good resolution of group conflicts, increased in the institutions studied, so also did those factors recognized as indicators of good faculty development, such as the faculty members' increasing motivation, productivity, and sense of self-esteem.**

Table 1

Relative Degrees of Satisfaction with Organizational and Faculty Development Dimensions Shown by 1,097 Faculty at 13 Military Teaching Hospitals by the Ranking of Their Mean Scores for These Dimensions, 1988*

Dimension	Rank of Mean Scores of Faculty from Each Branch of Military Service†		
	Army	Navy	Air Force
Organizational			
Task objectives	10th	10th	10th
Group performance	9th	8th	9th
Group norms	8th	7th	6th
Conflict resolution	7th	9th	7th
Clarity of mission	6th	6th	8th
Information processing	5th	5th‡	5th
Authority and power	4th	4th‡	4th‡
Systems structure	3rd‡	2nd‡	3rd‡
Resources	2nd‡	1st‡	2nd‡
Reward system	1st‡	3rd‡	1st‡
Faculty development			
Motivation	8th	8th	8th
Self esteem	7th	7th	7th
Productivity	6th	6th	6th
Task identity	5th	5th	5th
Group identity	4th	4th	4th
Career growth	3rd	3rd	3rd
Career satisfaction	2nd	2nd	2nd
Personal objectives	1st	1st	1st‡

*The authors distributed a questionnaire to an estimated 2,331 teaching faculty at 13 military teaching hospitals; 1,097 faculty completed the questionnaire satisfactorily for use in this study. The questionnaire presented questions concerning various dimensions of faculty development and organizational behavior, and the faculty rated these dimensions on a five-point Likert-type scale, where 1 = least satisfactory and 5 = most satisfactory. This table shows the hierarchy of the mean scores from each service branch's hospitals.

†A higher number indicates a higher ranking of a mean score. For example, among the ten organizational dimensions, task objectives received the highest rank (10) from the faculty in each branch, indicating that, relative to the other organizational dimensions, the faculty felt that their daily work expectations were generally understood. Among the eight faculty development dimensions, motivations received the highest rank, indicating that, relative to the other faculty development dimensions, the faculty felt that their motivation was high.

‡The mean score indicates that fewer than 50% of the responding faculty felt that this dimension was satisfactory.

Survey Results

A composite score was tabulated from the mean of the total scores of the survey questions that related to either organizational behavior or faculty development. These values were termed the Organizational Behavior Factor (OBF), and the Faculty Development Coefficient (FDC), respectively. The OBF and the FDC were calculated for 1,097 respondents; however, 37 questionnaires used for the comparison between the OBF and the FDC had to be discarded due to missing values, leaving a total of 1,060 eligible questionnaires.

A mean value for each of the different elements was determined from the Likert scores for each of the questions pertaining to that element, and a composite mean score was then determined for both the OBF and the FDC. The mean value for the OBF was 3.587, with a median score of 3.623 and a mode of 3.844, for 1,060 cases. The mean for the Faculty Development Coefficient (FDC) was 2.973, with a median of 3.0 and a mode of 3.063, for 1,097 cases.

When the mean scores for OBF and the FDC for 1,060 respondents were compared using Pearson's product moment correlation coefficient, a strong linear association was found ($p < .0001$) (Fig. 1). This would imply that as an increase in supportive organizational behavior was perceived among the faculty, the perception of their own faculty career development improved as well.

The Army faculty had significantly higher scores for the OBF than did the faculties from the Navy and Air Force when the individual elements of organizational behavior were compared. There was, however, a remarkable consistency between all groups in terms of the ranking and perceived satisfaction with each of the ten elements of organizational behavior (Table 1). Elements of organizational behavior that directly affect daily functioning received the highest ranking across the board. Faculty gave the highest mean score to task objectives, indicating that they felt their daily work expectations were generally understood. Other local group behaviors, such as overall work performances, group norms, and resolution of group conflicts, also had higher mean scores.

Organizational behavior that was centered in the less personal, larger systems structure received the lowest scores. A mean score of 3 or less for any OBF element occurred where the faculty perceived this organizational behavior to be unsupportive. The overall medical department structure, the availability of resources, and the formal reward system had the lowest mean scores from all faculty.

Despite the poor scores for systems behavior, reward systems, and resources, the faculty members surveyed consistently viewed themselves as being productive and highly motivated and possessing strong self-esteem (Table 1). Overall, the mean scores for the faculty development elements were higher than were those for the organizational behavior elements, with only three faculty development elements having mean scores less than 3.0. Faculty development factors that reflected more personal control by the respondents, namely intrinsic motivation, self-esteem, and productivity received the highest mean scores from all groups. Those factors that were more dependent

upon the response and support of the organizational structures, such as career growth, career satisfaction, and meeting personal objectives, had the lowest mean scores.

Summary and Conclusions

A strong linear relationship was demonstrated between organizational behavior and faculty development in 13 teaching medical centers within the military medical system.

Although most of the responding faculty perceived themselves as being highly motivated and productive in their professional activities, all groups gave their career growth and the opportunity to meet their personal objectives some of the lowest ratings of the faculty development dimensions listed in the questionnaire. The greatest obstacles the responding faculty perceived to good faculty development were a lack of resources and a poor reward system.

While these data were obtained using faculty from military teaching programs, the authors maintain that the findings would have the same meaning, and deliver the same message, if they had been obtained from faculty of nonmilitary academic institutions, such as university teaching faculty. In either kind of institution, a reward system that is not valued or does not appropriately recognize achievement by faculty members will ultimately be counterproductive to that institution. In the same vein, a system that is perceived as sluggish, complex, and unresponsive in procuring adequate resources for its members will impair morale and productivity.

The implications from these data are that faculty retention, job satisfaction, and career development are areas that can be enhanced if proper attention is paid to certain organizational characteristics. Supporting junior faculty practices and research within the institution by streamlining the procurement and grants process, instituting a reward system that reflects the talents and contributions of the individual and that is valued by the faculty members, as well as generally personalizing the organizational behavior of a particular department or institution, may very well be examples of how a program can produce a more supportive, creative environment and promote greater productivity among its faculty. The creation of a formal faculty development program within a department of institution is an organizational behavior that should be considered as one that would help faculty gain the insight and skills required to be more effective in their work, which would in turn enhance the progress of their careers. Of interest, and a potential area of future studies, are the relationships between faculty development and organizational behaviors among certain subgroups such as women and other minorities, and specific medical and surgical subspecialties.

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AAMC DATA REPORT

Results of the NRMP for 1990

The number of U.S. seniors who enrolled in the National Resident Matching Program (NRMP) in 1990 decreased to 15,254 from 15,438 in 1989. The number who subsequently withdrew increased by 25 (Table 1), and the number of active applicants decreased by 209. Matched U.S. seniors totaled 12,976 (93.3%) in 1990, compared with 13,215 (93.6) in 1989.

The total number of other U.S. and Canadian citizens ("fifth pathway" students, physician applicants [earlier U.S. graduates seeking graduate training], osteopathic and Canadian graduates) who applied to the Match this year decreased by 238 to 3,345. Among the other U.S. and Canadian citizens, the number of "fifth pathway" applicants decreased from 171 to 114; 82 participated in the Match, and 72% were successful. The number of graduates of osteopathic schools who initially applied to the Match decreased by seven percentage points to 1,188; 60.7% were matched. The number of physician applicants decreased by five percentage points, and 50% were successful in the Match.

The number of U.S. citizen-FMGs who applied decreased by 209 to 1,306; 55.6% successfully matched, an increase of 2.3 percentage points. The number of foreign-born-FMGs who initially enrolled decreased by 160 (4%) to 3,935; however, 1,044, compared with 1,038 in 1989, were active at the time of the Match. The number who matched increased by 5.5 percentage points to 59.7%.

The number of positions offered for the first postgraduate year (PGY1) broke the 20,000 mark in 1990, when 20,101 positions were offered. The numbers offered in family practice, three-year programs in internal medicine, and pediatrics decreased. Increases occurred in one-year internal medicine programs, obstetrics and gynecology, anesthesiology, emergency medicine, and diagnostic radiology (Table 2). The ratio of positions per U.S. senior student initially enrolled was 1.3:1 in 1990.

The overall filling of PGY1 positions decreased by one percentage point in 1990 to 79.2%, and the filling of positions by U.S. seniors decreased by 1.6 percentage points. Since 1985, filling by U.S. seniors has decreased by nearly ten percentage points and total filling by just under nine. The most competitive programs were those in emergency medicine, obstetrics and gynecology, orthopedic surgery, general surgery, and diagnostic radiology, where over 90% of positions were filled with U.S. seniors. Family practice, internal medicine, pediatrics, psychiatry, and pathology filled at or below the 64.6% average with U.S. seniors.

An increased number of Advanced Programs for Students (PGY2) positions were offered in the Match this year. Applicants matching to these positions will do a year of broad clinical training—generally in internal medicine, general surgery, or transitional year—before entering advanced positions in 1991. Three hundred twenty-six programs offered 1,656 positions, which were 75.1% filled by 1,244 U.S. seniors and 84.6% filled by 1,401 total applicants. One hundred thirteen programs in diagnostic radiology offered 429 PGY2 positions, of which 80.9% were filled with U.S. seniors and 93% were filled overall. One hundred eleven programs in anesthesiology offered 822 positions, of which 642 (78%) were filled with U.S. senior students and 41 (6%) were filled with other applicants, for a total filling of 84.3%. Other advanced programs with significant applicant matches included those in physical medicine (102 matched, 76.7%), emergency medicine (74 matched, 60.7%), orthopedic surgery (43 matched, 87.8%), and psychiatry (35 matched, 38.9%).

In the 1990 Match, 794 applicants participated as 397 couples; 365 of these couples were U.S. seniors. Ninety-seven percent of the couples were matched successfully.

Data describing the trends in positions offered and filled by U.S. seniors and other applicants during the past several years are published annually in April in *NRMP Data*. It is available upon written request to the NRMP, One Rotary Center, Suite 807, Evanston, IL 60201.

This report was prepared by the National Resident Matching Program.

Table 1

Participation in the National Resident Matching Program in 1990

Category	U.S. Senior Students		Other U.S. and Canadian Students*		U.S. Foreign Graduates		Foreign-born Foreign Graduates		Total Applicants	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total applicants	15,254	100.0	3,345	100.0	1,306	100.0	3,935	100.0	23,840	100.0
Withdrew	1,346	8.8	1,407	42.1	477	36.5	1,606	40.8	4,836	20.3
Active participants	13,908	91.2	1,938	57.9	829	63.5	2,329	59.2	19,004	79.7
Matched for PGY1	12,976	93.3	1,085	56.0	461	55.6	1,390	59.7	15,912	83.7
Unmatched for PGY1	932	6.7	853	44.0	368	44.4	939	40.3	3,092	16.3
Total	13,908	100.0	1,938	100.0	829	100.0	2,329	100.0	19,004	100.0

*Other U.S. and Canadian students consist of graduates from U.S. osteopathic schools and Canadian medical schools; physician candidates, that is, earlier U.S. graduates seeking graduate training positions; "fifth-pathway" students, who are U.S. nationals who have completed course requirements for a medical degree abroad followed by a year of clinical training in a U.S. hospital under medical school sponsorship.

Table 2

Positions Offered and Filled by Types of Applicants in 1990

Specialty	PGY1 Positions Offered		Applicants Matched: U.S. Senior Students			Other U.S. Applicants‡			Foreign-born Foreign Graduates			Total Applicants		
				%			%			%			%	
	No.	%*	No.	*	†	No.	*	†	No.	*	†	No.	*	†
Family practice	2,393	11.9	1,418	10.9	59.3	200	12.9	8.4	67	4.8	2.8	1,685	10.6	70.4
Internal medicine	7,442	37.0	4,569	35.2	61.4	512	33.1	6.9	825	59.4	11.1	5,906	37.1	79.4
Pediatrics	2,052	10.2	1,286	9.9	62.7	156	10.1	7.6	227	16.3	11.1	1,669	10.5	81.3
Obstetrics-gynecology	1,076	5.4	925	7.1	86.0	94	6.1	8.7	25	1.8	2.3	1,044	6.6	97.0
Psychiatry	1,135	5.6	664	5.1	58.5	124	8.0	10.9	75	5.4	6.6	863	5.4	76.0
Medical specialties	81	0.4	38	0.3	46.9	6	0.4	7.4	9	0.6	11.1	53	0.3	65.4
Dermatology	15	0.1	15	0.0	100.0	0	0.0	—	0	0.0	—	15	0.0	100.0
Neurology	51	0.3	15	0.1	29.4	5	0.3	9.8	8	0.6	15.7	28	0.2	54.9
Ophthalmology	15	0.1	8	0.1	53.3	1	0.1	—	1	0.1	—	10	0.1	66.7
General surgery	2,255	11.2	1,501	11.6	66.6	133	8.6	5.9	74	5.3	3.3	1,708	10.7	75.7
Surgical specialties	633	3.1	539	4.2	85.2	62	4.0	9.8	4	0.3	0.6	605	3.8	95.6
Neurosurgery	38	0.2	25	0.2	65.8	3	0.2	7.9	0	0.0	—	28	0.2	73.7
Orthopedic surgery	456	2.3	400	3.1	87.7	52	3.4	11.4	1	0.1	—	453	2.8	99.3
Otolaryngology	52	0.3	42	0.3	80.8	3	0.2	5.8	2	0.1	—	47	0.3	90.4
Urology	79	0.4	65	0.5	82.3	4	0.3	5.1	0	0.0	—	69	0.4	87.3
Plastic surgery	8	0.0	7	0.0	87.5	0	0.0	—	1	0.1	—	8	0.0	100.0
Support specialties	1,706	8.5	1,172	9.0	68.7	187	12.1	11.0	34	2.4	2.0	1,395	8.8	81.8
Anesthesiology	321	1.6	251	1.9	78.2	9	0.6	2.8	4	0.3	1.2	264	1.7	82.2
Emergency medicine	440	2.2	337	2.6	76.6	71	4.6	16.1	2	0.1	0.5	410	2.6	93.2
Pathology	486	2.4	243	1.9	50.0	24	1.6	4.9	25	1.8	5.1	292	1.8	60.1
Physical medicine	95	0.5	71	0.5	74.7	7	0.5	7.4	0	0.0	0.0	78	0.5	82.1
Preventive medicine	15	0.1	5	0.0	33.3	0	0.0	—	1	0.1	6.7	6	0.0	40.0
Diagnostic radiology	337	1.7	258	2.0	76.6	76	4.9	22.6	2	0.1	0.6	336	2.1	99.7
Therapeutic radiology	6	0.0	5	0.0	83.3	0	0.0	—	0	0.0	0.0	5	0.0	83.3
Nuclear Medicine	6	0.0	2	0.0	33.3	2	0.1	33.3	0	0.0	0.0	4	0.0	66.7
Transitional	1,328	6.6	864	6.7	65.1	70	4.5	5.3	50	3.6	3.8	984	6.2	74.1
Total	20,101	100.0	12,976	100.0	64.6	1,546	100.0	7.7	1,390	100.0	6.9	15,912	100.0	79.2

*Percent distributions of positions offered and filled among specialties (percentages may not add to 100 due to rounding).
†Percent of positions offered in specialty that were filled by applicants.
‡Students listed in the footnote to Table 1 plus U.S. foreign medical graduates.